UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,405	12/22/2000	Tao Xia	1781-0212P	8743

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EXAMINER
DESIRE, GREGORY M

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.		Applicant(s)
Office Action Summary	09/742,405		XIA ET AL.
	Examiner		Art Unit
	Gregory M. Desire		2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2004*.
2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-10* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *09 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1.   Applicant's election with traverse of group 1 in Paper No. 7 is acknowledged.

The traversal is on the ground(s) that invention must be independent or distinct and

must be a serious burden on the examiner. This is not found persuasive because

divergent subject matter is indeed a serious burden on the examiner.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain

et al. (6,289,112) in view of Lee et al (5,822,453).

Regarding claim 1 Jain discloses,

Acquiring fingerprint image data (note col. 8 lines 13-15, camera acquire

fingerprint data);

Partitioning said fingerprint image data onto at least one data block corresponding to a local area of said image data (note col. 6 lines 39-42, dividing image into smaller sub-images);

Jain does not disclose expressly generating a histogram function. However, Lee discloses generating a histogram function (note fig. 3 block s100 and col. 15 lines 18-21, computes a histogram k (x)).

Jain and Lee are combinable because they are from field of image luminance. At the time of the invention, it would have been obvious to a person of ordinary skills in the art to include generating histogram function in the system of Jain as evidenced by Lee. The suggestion/motivation for doing so would have been reducing sensitivity to sampling error improving estimating and adjusting contrast (note Lee col. 2 lines 50-63). Therefore, it would have been obvious to combine Jain with lee to obtain the invention as specified in claim 1.

Performing a histogram transformation of said histogram function (note Lee col. 6 lines 23-26, computing target histogram performs transformation (i.e. scaling) on the histogram function.)

Wherein said histogram transformation is adapted to the contrast level of said local area of said fingerprint image data (Lee, col. 6 lines 25-38 contrast level is adjusted) and a pre-enhanced fingerprint image data is generated with local enhancement (note Jain block 405 and col. 7 lines 39-41).

Regarding claim 2 Jain and Lee discloses,

Partitioning said fingerprint image data into a plurality of data blocks (note Jain col. 6 lines 39-42, dividing image into smaller sub-images) each of said plurality of blocks corresponding to a different local area of said image data and at least one of said plurality blocks having contrast level different than a second of said plurality of data blocks (note Jain fig 6a shows blocks having different values).

Wherein said histogram transformation is adapted to said different contrast levels of said plurality of blocks and pre-enhanced fingerprint image data is generated with local enhancement for a plurality of local areas of said image data. (Note Lee col. 6 lines 23-43).

Regarding claims 3 and 5 Jain and Lee discloses,

Wherein said histogram transformation includes an objective function with a relatively high value at both endpoints of an intensity intervals and a relatively low value at a middle of said image intervals (note Lee col. 5 lines 35-45, examiner interprets maxima as endpoints).

Regarding claim 4 Jain and Lee discloses,

Wherein noise and distortions in said image data are reduced (note Jain col. 2 lines 27-28 and col. 7 lines 39-40, smoothing reduces noise).

Regarding claims 6 and 7 Jain and Lee discloses,

Performing orientation filtering on said pre-enhanced data using directional

convolution for two dimensional digital image processing,

Wherein said pre-enhanced image is smoothed and enhanced (note col. 7 lines

39-40, pre-processing is smoothing).

Regarding claim 8 Jain and Lee discloses,

Thinning said fingerprint image data to remove false connections of ridges in said

data (Jain fig. 4 block 430, thinning is performed).

Wherein said thinning includes applying a first table and a second table to a

plurality of pixels using an algorithm (note col. 17 line 42).

Regarding claim 9 Jain and Lee discloses,

Generating tables using rules for character and biological data (note Jain

Fig. 11 and col. 13 lines 50-55 display data of fingerprint (biological data)).

Regarding claim 10 Jain and Lee discloses,

Parameters of biological data (note Jain col. 16 lines 15-45).

Conclusion

Any inquiry concerning this communication or earlier communications from the

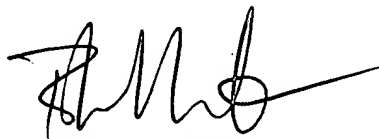examiner should be directed to Gregory M. Desire whose telephone number is (703)

308-9586. The examiner can normally be reached on M-F (8:30-6:00) Second Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory M. Desire
Examiner.
Art Unit 2625

G.D.
April 29, 2004

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
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